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NOVEMBER 16.

The President, Dr. RUSCHENBERGER, in the chair.

Twenty-seven members present.

The following papers were presented for publication:—

“Descriptions of New Fossil Shells from the Tertiary of California.” By R. E. C. Stearns.

“A Descriptive Catalogue of Scalidæ of the West India Islands.” By O. A. L. Mörch.

On Trichocephalus affinis, Dies.—Dr. CHAPMAN noticed having found in the intestine of the llama the *Trichocephalus affinis* described by Diesing as occurring in the camel, and observed that it was interesting to find the same intestinal worm in animals so closely related structurally, though so widely separated geographically.

On the Castor Glands of the Beaver.—Dr. CHAPMAN also called attention to the arrangement of the castor glands in the American beaver, the lower symmetrical glands opening into the ano-preputial passage consisting of only two glands, whereas the European species in this respect exhibited three.

NOVEMBER 23.

The President, Dr. RUSCHENBERGER, in the chair.

Seventeen members present.

On the Mesozoic Red Sandstone of the Atlantic States.—Prof. PERSIFOR FRAZER, Jr., said that the art of stratigraphy has proved itself capable of most wonderful extension, and has given the foundation for whatever of exactitude of statement can be claimed for geology.

It is another instance of the surprising lengths to which probability can be carried by inductive reasoning based on comparatively few but generally admitted premises. It is surprising to read over the results of the application of this method in any general outline of geology, and to note that mere relative position of things can unfold to us a marvellous story of motion, and evolution or successive changes, according to law.

The more facts we know the wider is the range of this application, and sometimes one very little fact well established will require vast continents to be plunged in the imagination thousands of feet

downward or upward in order that it may admit of explanation. Thus the finding of a single small shell imbedded in the crest of a lofty range of interior mountains of which the base, flanks, and comb prove to be made up respectively of the same persistent strata, and the identification of this shell with an exclusively marine species, require the conclusion that the whole of this lofty range was once under an ocean whose level was thousands of feet lower, and whose margin is now thousands of miles away.

The greatest conquests of the mind over large areas will never result from the direct application of the physical power of man to overcome the obstacles which stand in the way of their realization. The inductive plan, though never leading to certainty, outstrips by leagues the snail's pace of actual demonstration. A good consulting geologist will furnish information in a few weeks as to the number of tons of valuable mineral on a property, which will enable a company to organize, start its business, grow rich, and bequeath its industry to a new generation before a theory-hater could sink the number of trial shafts sufficient to demonstrate to a certainty that the deposit was continuous. And thus what with reports already made on adjoining properties, science goes on triangulating, as it were, from one area to another, till the belts of country which are unknown as to their general possibilities become very few and isolated.

But there are such belts—aggravating broad belts of well-settled country which occupy in the geological finished map the positions which used to be held by the "Great American Desert," the central parts of Africa, and the high lands of the Mountains of the Moon or the Himalayas in our school geographies.

It is not so long ago since it was taught in school-books that the bottom of the ocean was a great floor of fine sand. The writers, following each other, had observed the deposition of suspended substances in the deltas and along the sea coast, and observing the currents of the sea, and forgetting that the immense organic life of the ocean must find a final resting place, had dusted the whole ocean with the sand of the sea-shore but without its shells.

Such an area is the Mesozoic red sandstone of the Atlantic States. It sweeps upward from Virginia to New York, and exists in North Carolina and Connecticut, appearing everywhere (except in N. C.) under a provoking uniformity of condition, and shutting out our view from the underlying strata, and the part they play in connecting the paleozoic series east and west of it. Singularly enough, a large fraction of the American geologists who have made themselves distinguished have passed or are passing their lives upon it; and yet we know next to nothing about it.

"If the Mesozoic shales *only* could be removed like the lid of a box, what light would it not throw upon the structural riddles!" has been thought or expressed by every geologist. Here is a case where the ordinary methods of stratigraphy will not help us.

We are required to induce a condition of things under cover different from that in view.

The case is like that of the condition of the Atlantic bottom. No amount of wishing, in cottages by the sea (*aut aliubi*) availed to solve the problem till Lieut. Thompson, U. S. N., invented his deep-sea dredger, and masses of cretaceous ooze commenced to be hauled up. We must do the same with the diamond drills in the New Red. But it paid to dredge because this act was a necessary preliminary to the union of two impatient continents by a telegraph line. What will pay here? That is a question which no one can answer just now. It is just an instance of the old controversy between narrow utilitarianism and enlightened economy: whether a property owner is wise in neglecting all parts of his estate except those which tradition assures him will pay, or whether, in the profit and loss account in which he enters general expenditures for the proper exploitation and development of his entire domain, the profits do not in the end outweigh the losses.

Here, of course, another element is introduced into the question. Is there any doubt about the establishment one way or the other of a fact which will enter into scientific calculations? Was ever such a fact so used barren of economical gain in the end? Will it pay for the State Government to spend the money of the whole people for such a purpose? Is it in accordance with the doctrine of "police government" held by an able school of advanced political economists?

On Dialysis in Oyster Culture.—Prof. FRAZER also remarked, that, in a recent conversation with Dr. Hunt on the subject of the effect of saline solutions in the human stomach and intestine, that gentleman suggested as his explanation of that effect, that it was primarily mechanical or physical; consisting in fact of a dialytic action set up between the denser solution in the stomach, and the less dense solutions in the tissues and lacteals communicating with it; the walls of the stomach and intestine forming the dialyser or diaphragm through which the action takes place. The result of such diffusion must (he suggests), in accordance with Graham's well-known law, produce a greater flow of the less dense solutions inward than of the denser outward from the stomach; and as a consequence, the filling of the latter and the draining of the small ducts.

That repletion produces, by reflex action on the nerves occupying that portion of the human body, the further effects observed, is well known.

There is another practical application which can be made of this theory of dialytic action, no less important in its bearings, and which has an economic value, viz., the fattening of oysters.

The oysters brought to our large markets on the Atlantic seaboard are generally first subjected to a process of "laying out,"

which consists in placing them for a short time in fresher water than that from which they have been taken.

Persons who are fond of this animal as an article of food, know how much the "fresh" exceed the "salts" in size and consistency. The "Morris Coves" of this city, while very insipid, are the plumpest bivalve brought to market. On the other hand, the "Absecons" and "Brigantines," while of better flavor (to those who prefer salt oysters), are invariably lean compared to their transplanted rivals, as also are the "Cape Mays," though, from some reason, not to the same extent.

The most experienced oyster dealers inform me, that the time for allowing the salt oysters taken from the sea-coast to lie out, varies, but is seldom over two to three days. At the end of this time the maximum plumpness is attained, and beyond this, the oyster becomes lean again, besides having lost in flavor.

It is not possible that the smooth rotundity of the laid-out oyster can be due to increase of flesh. The time is too short, and the conditions are unfavorable.

On the other hand, the explanation by dialytic action is easy. During the growth of the oyster on the sea-coast, his tissues are constantly saturated with the ocean brine. On removing this oyster to merely brackish, or to fresh water, the conditions are at once favorable for osmose to be commenced. The fresher and less dense liquid without, permeates inwards more rapidly than the more saline and denser liquids within escape, and the effect is to swell the tissue as a cow's bladder half filled with air and immersed in a vessel of hydrogen is swollen, or still more nearly like the swelling of a bladder half filled with copper sulphate when immersed in pure water.

It is worth while to inquire whether means could not be devised to effect this fattening, while yet not depriving the oyster of the salty flavor which is its chief charm to many consumers. Perhaps an immersion in concentrated brine for several days, and its subsequent removal to ocean water, would suffice. As to the value of placing corn-meal upon a pile of oysters for the purpose of fattening them, it is obvious that the time is too short. A simple way of ascertaining whether there were or not an actual gain in flesh, would be by taking a hundred or more oysters from a given locality on the sea-coast, drying them at 220° Fah., and ascertaining their average weight, and repeating the process for the same number of like oysters after transplanting.